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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,866	07/15/2003	Stewart Frederick Bryant	50325-0807	9132

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EXAMINER

SOL, ANTHONY M

ART UNIT	PAPER NUMBER
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2619

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/620,866	Applicant(s) BRYANT ET AL.	
	Examiner ANTHONY SOL	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21, 23-26 and 28-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 23-26, and 28-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/8/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/14/2008 has been entered.
- The previous objection to claim 9 is withdrawn.
- Claims 9 and 29-32 have been amended.
- Claims 1-21, 23-26, and 28-32 remain pending.

Claim Objections

1. Claims 23, 24, and 28 are objected to because of the following informalities:

For claims 23 and 28, lines 9 and 13, respectively, the word, "node" should state -- node;-- or -- node,--. In other words, a semicolon or comma should follow "node" to mark the end of a limitation.

For claim 24, line 7, the word, "notifying" should state -- notifying;-- or -- notifying,--. In other words, a semicolon or comma should follow "notifying" to mark the end of a limitation.

The Applicant should review other claims for the same informality.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9, 23, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 23, and 30 recite "A computer-readable medium comprising one or more sequences of instructions..." is vague and indefinite because it is unclear how a medium can comprise instructions. A medium can have instructions stored on it, recorded on it, etc, but it is not clear how it can just comprise instructions. It is suggested that "comprising" be changed to "encoded with" to overcome the rejection.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9, 23, and 30 are rejected under 35 U.S.C. 101 because it recites a "A computer-readable medium comprising..." which is not acceptable language per the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (see page 52 of the Interim Guidelines).

It is suggested that “comprising” be replaced with “encoded with” to overcome the rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 6-11, and 15-18, are rejected under 35 U.S.C. 102(e) as being anticipated by Pub. No. US 2002/0136223 A1 (“Ho”).

Regarding claims 1, 2, 6-11, and 15-18,

Ho discloses recognizing a tunneled packet comprising an address directly identifying a neighbor node to the forwarding node as a tunnel end point (see para. 26, *The ATM aware LSRs 16 with the MPLS network 12 discover their peers within the MPLS network 12 when the **IP addresses of the corresponding PNNI entities 15 are advertised** by an Interior Gateway Protocol or IGP; see also para. 28, It will be appreciated that this arrangement allows different VPCs (Virtual Path Connections) and VCCs (Virtual Channel Connections) to share one Constraint-based Routed-Label Switched Path (CR-LSP), even if they terminate on different ATM interface cards. Preferably, all CR-LSPs which terminate on the **IP address of a PNNI entity (i.e. an***

ATM aware LSR) utilize penultimate hop popping in order to remove the need for additional label lookup and label pop operations at the ATM aware LSP 16 at the egress of the CR-LSP; see also paras. 37 and 38, As described above, penultimate hop popping is used and a label at another level of the **MPLS label stack is used to identify control traffic**. The label to identify control traffic can be handled in one of two ways. First, a label may be reserved for control traffic destined for the PNNI entity on ATM aware LSRs. Alternatively, **the reserved Explicit Null IPv4 (or IPv6) label may be pushed on the stack as the last entrap before the IP header**. In either case, the IP source address of the encapsulating IP packet is the IP address of the originating PNNI entity, and the **IP destination address is the IP address of the remote PNNI entity**), removing the header and forwarding the payload to the neighbor node. (para. 34, In operation when a MPLS labelled packet arrives on a CR-LSP at the ATM aware LSR 16 that is the endpoint of the CR-LSP, penultimate hop popping should preferably have **already removed the label** corresponding to the transporting CR-LSP. This exposes the next label in the label stack, i.e. the label corresponding to the final destination ATM interface or ATM interface card for the ATM traffic. The LSR can use this label to forward the labelled packet to the correct ATM interface or ATM interface card).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-5, 12-14, 19-21, 23-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable Ho in view of Pub. No. US 2003/0053414 A1 ("Akahane").

Regarding claims 3 and 12,

Ho does not disclose that the recording step comprises a manual configuration recording step.

Akahane discloses setting Label Switched Paths manually by a network administrator (para. 9).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify signalling and routing protocols used in MPLS networks of Ho to include a manual configuration recording step as taught by Akahane. One skilled in the art would have been motivated to make the combination to allow for flexible configuration capabilities.

Regarding claims 4 and 13,

Ho discloses that MPLS encompasses new signalling protocols such as Label Distribution Protocol (LDP) which are used to create connections over a network and uses network layer routing protocols (either existing or new protocols) to route these connections (para. 2).

Regarding claims 5 and 14,

Ho does not disclose the step of constructing as a repair path around a component in the data communications network a tunnel having a tunnel end point prior to issuing the notification from the tunnel end point.

Akahane shows in fig. 9, setting a Label Switch Paths from CR1 to CR3 to CR2 before utilizing the PHP method using LSP and LDP.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify signalling and routing protocols used in MPLS networks of Ho to include construction of a repair path around a component a tunnel before issuing the notification from the tunnel end point as taught by Akahane. One skilled in the art would have been motivated to make the combination to use a router in a backup path in an MPLS network (see Akahane, Abstract).

Regarding claims 19-21, 23-26, and 28,

Ho discloses recognizing a tunneled packet comprising an address directly identifying a neighbor node to the forwarding node as a tunnel end point (see para. 26, *The ATM aware LSRs 16 with the MPLS network 12 discover their peers within the MPLS network 12 when the **IP addresses of the corresponding PNNI entities 15 are advertised** by an Interior Gateway Protocol or IGP; see also para. 28, It will be appreciated that this arrangement allows different VPCs (Virtual Path Connections) and VCCs (Virtual Channel Connections) to share one Constraint-based Routed-Label Switched Path (CR-LSP), even if they terminate on different ATM interface cards.*

*Preferably, all CR-LSPs **which terminate on the IP address of a PNNI entity (i.e. an ATM aware LSR) utilize penultimate hop popping in order to remove the need for additional label lookup and label pop operations at the ATM aware LSP 16 at the egress of the CR-LSP**; see also paras. 37 and 38, As described above, penultimate hop hopping is used and a label at another level of the **MPLS label stack is used to identify control traffic**. The label to identify control traffic can be handled in one of two ways. First, a label may be reserved for control traffic destined for the PNNI entity on ATM aware LSRs. Alternatively, **the reserved Explicit Null IPv4 (or IPv6) label may be pushed on the stack as the last entrap before the IP header**. In either case, the IP source address of the encapsulating IP packet is the IP address of the originating PNNI entity, and the **IP destination address is the IP address of the remote PNNI entity**), removing the header and forwarding the payload to the neighbor node. (para. 34, In operation when a MPLS labelled packet arrives on a CR-LSP at the ATM aware LSR 16 that is the endpoint of the CR-LSP, penultimate hop popping should preferably have **already removed the label** corresponding to the transporting CR-LSP. This exposes the next label in the label stack, i.e. the label corresponding to the final destination ATM interface or ATM interface card for the ATM traffic. The LSR can use this label to forward the labelled packet to the correct ATM interface or ATM interface card).*

Ho does not disclose the step of constructing as a repair path around a component in the data communications network a tunnel having a tunnel end point prior to issuing the notification from the tunnel end point.

Akahane shows in fig. 9, setting a Label Switch Paths from CR1 to CR3 to CR2 before utilizing the PHP method using LSP and LDP.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify signalling and routing protocols used in MPLS networks of Ho to include construction of a repair path around a component a tunnel before issuing the notification from the tunnel end point as taught by Akahane. One skilled in the art would have been motivated to make the combination to use a router in a backup path in an MPLS network (see Akahane, Abstract).

8. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pub. No. US 2004/0151181 A1 ("Chu") in view of U.S. Patent No. 7,349,427 B1 ("Canning").

Regarding claims 29-32,

Chu shows in figs. 2A, 2B, and 2C computing a spanning tree, rooted at the first node, of available nodes, which excludes nodes reachable by traversing a component (paras. 37 and 38, *When there is a **failure** along one of the connections, the modules are able to detect the failure and **reroute the connections**. Another spanning tree is then formed to ensure failure-free connections between the BMs and the proper operation of the LAN. The standard for bridging, including a spanning tree algorithm, is specified in the IEEE 802.1 d standard. **Once the root BM is selected**, the other BMs attempt to connect to the root BM, either directly or through other BMs. The criterion for connection is to use the least accumulated path cost. The cost of the path to the root*

*through a BM is encoded in the Root Path Cost parameter. **The value is obtained by adding the cost of the individual segments of the path).***

Chu discloses re-computing the spanning tree (para. 37, *When there is a failure along one of the connections, the modules are able to detect the failure and **reroute** the connections. Another spanning tree is then formed to ensure failure-free connections between the BMs and the proper operation of the LAN).* **Note** than in order to reroute the connections, the spanning tree must be re-computed.

Chu does not disclose assigning to an available node a negative of a cost of reaching the first node from the available node.

Canning discloses setting the encapsulation cost, including providing a negative encapsulation cost.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the MPLS-based layer -2 VPN services of Chu to incorporate negative encapsulation cost as taught by Canning. One skilled in the art would have been motivated to make the combination in order to appropriately set the encapsulation cost, including a negative encapsulation cost, so that the use of tunneling when determining an optimum path can be controlled (see Canning, col. 5. line 54 – col. 6, line 7).

Response to Arguments

9. Applicant's arguments with respect to claims 1, 9, 10, 18, and 29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Zheng (US2004/0001508A1) teaches tunneling packets with headers indicating source and destination addresses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY SOL whose telephone number is (571)272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Anthony Sol/
Examiner, Art Unit 2619
6/17/2008

/Wing F. Chan/
Supervisory Patent Examiner, Art Unit 2619
6/16/08